

【特許請求の範囲】

【請求項1】 分配すべき物質を収容するためのプラスチックびんと、予め決定された量の物質を分配するための手動ポンプと、ポンプをびんの口に固定するためのプラスチックソケットリングとを備える、液体物質又はクリームもしくはペースト形態の物質を分配するためのディスペンサであって、前記ポンプが、両端が開いており且つ同様にプラスチック材料の逆止弁を第1の端部に備える全体的に円筒形中空プラスチック本体と、中空本体と同軸状であり且つ該本体に部分的に収容された全長円筒形中空プラスチックシャフトであって、シャフトの一端が中空本体の第2の端部を通って外側に突出しており、シャフトが中空本体に対して両方向に軸方向に可動であり、シャフトの突出端部がシャフトの内側に連通する分配ノズルを備えるプラスチック分配ノブを支持しており、シャフトの他端がシャフトの内側と中空本体の内側との連通のための少なくとも1個のアーチャを含む前記シャフトと、中空本体の内側で液密条件下で両方向に可動なプラスチックピストンであって、該ピストンと逆止弁との間に配置された中空本体の内側部分が圧力チャンバを規定し、シャフトに配置され且つシャフトのアーチャを開閉するようにシャフトに対して両方向に可動である前記ピストンと、ピストンをシャフトのアーチャの閉鎖位置である静止位置に復帰させるための第1の弾性復帰手段と、分配ノブに加えられる圧力が停止する際に中空本体から最も突出する位置にシャフトを復帰させるための第2の弾性復帰手段と、中空本体の第2の端部を閉鎖すると共にシャフトの案内として機能する環状閉鎖エレメントと、びんの内部を外部に連結するためポンプに設けられており、ピストンが静止位置にあるときにこの通路を遮断する連結手段とを備えており、前記第1の弾性復帰手段が、分配ノブを押した際に弾性変形するプラスチックスカートから構成されていることを特徴とするディスペンサ。

【請求項2】 前記第2の弾性復帰手段が弾性変形可能なプラスチック材料から構成されており、ディスペンサの全構成部分が実質的に剛性な部材と実質的に弾性変形可能な部材との両方を形成することが可能な型の同様のプラスチック材料から形成されていることを特徴とする請求項1に記載のディスペンサ。

【請求項3】 前記プラスチック材料が、高密度、低密度及び超低密度形態で入手可能なポリエチレンであることを特徴とする請求項2に記載のディスペンサ。

【請求項4】 ピストンユニットのシャンクの第1の円筒形部分がポンプのシャフトの部分と同軸的にしっかりと結合されており、前記スカートがピストンユニットのシャンクの第2の円筒形部分を形成し且つ該第1の部分よりも小さい厚さであり、スカートが第1の部分及びピストンユニットと一体的に形成されていることを特徴とする請求項1から3のいずれか一項に記載のディスペン

サ。

【請求項5】 圧力チャンバとシャフトの内側との間の連通を遮断するために、ピストンの環状リップと協働するようにシャフトの内側端部に弁部材7が固定されており、該弁部材は、環状部材が弁部材と協働していないときには圧力チャンバをシャフトの内部に連結するための2つのアーチャを形成する交差形エレメントによりシャフトに連結されていることを特徴とする請求項4に記載のディスペンサ。

【請求項6】 第2の弾性手段が分配ノブと連合する環状ペローズエレメントを含むことを特徴とする請求項1から5のいずれか一項に記載のディスペンサ。

【請求項7】 逆止弁が、中空本体の底に設けられたアーチャの縁部上に支承される円形壁に一体的に結合された少なくとも一部を有する環状リムを含むことを特徴とする請求項1から6のいずれか一項に記載のディスペンサ。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は、液体物質又はクリームもしくはペースト形態の物質を分配するためのディスペンサに係り、該ディスペンサは分配すべき前記物質を収容するためのびんと、予め決定された量の物質を分配するために手動操作可能なポンプと、ポンプをびんの口に固定するためのソケットリングとを備える。

【0002】

【従来の技術及び発明が解決しようとする課題】 このようなディスペンサは以前から知られている。このようなディスペンサで使用されるポンプは、両端が開いており且つ第1の端部に逆止弁を備える全体的に円筒形本体と、中空本体に同軸状であり且つ本体に部分的に収容された全長円筒形中空シャフトであって、シャフトの一端が中空本体の第2の端部を通って外側に突出しており、シャフトが中空本体に対して両方向に軸方向に可動であり、シャフトの突出端部がシャフトの内部と連通する分配ノズルを備える分配ノブを支持しており、シャフトの他端がシャフトの内部と中空本体の内部との連通のための少なくとも1個のアーチャを備える前記シャフトと、中空本体の内部で液密条件下で両方向に可動のピストンであって、ピストンと前記逆止弁との間に配置された中空本体の内側部分が圧力チャンバを規定し、前記シャフトに配置され且つシャフトの前記アーチャを開閉するようにシャフトに対して液密条件下で両方向に可動である前記ピストンと、分配ノブに圧力が加えられないときにシャフトのアーチャが閉じている静止位置にピストンを復帰させるための第1の金属コイル復帰ばねと、分配ノブに加えられる圧力が停止するときに中空本体からほぼ突出する位置にシャフトを復帰させる第2の金属コイル復帰ばねと、シャフトの案内としても機能する中空本体の第2の端部の環状閉鎖エレメントと、びん

の内部を外部に連結するようにポンプの内側に設けられており、ピストンが静止位置にあるときには連結を遮断するように構成された連結手段とから実質的に構成される。

【0003】逆止弁は一般に金属ボール型であり、圧力チャンバ内に存在する被分配物質がびんに逆流するのを阻止する。

【0004】これらの既知のディスペンサの第1の欠点は、関連ポンプが、被分配物質と接触して化学的に反応し、これらを汚染する金属部分（特に逆止ボール弁及び第1の復帰ばね）を含むという点にある。この結果、前記金属部分が腐食し、ポンプの適正な運転を妨げる危険がある。

【0005】金属ボール逆止弁の代わりに特定形態のプラスチック弁を使用するポンプも知られている（例えば本願出願人名義のヨーロッパ特許出願第E P-A-04 69368号参照）。具体的には、これらの弁はびんに収容された物質により侵食されないプラスチック材料から構成され得る。しかしながら、汚染の問題を完全に克服するには不十分である。

【0006】従って本発明の第1の目的は、分配される物質を汚染しないような上記型のディスペンサを提供することである。

【0007】空になったディスペンサの構成材料を再利用する問題に関して、ポンプの金属部分の存在がこの点で深刻な問題を生じることは自明である。これは、ポンプを取り外して廃棄しなければならないからである。このような操作は実用不能な程度まで再利用費用を上昇させる。また、金属部材なしにポンプを製造しようとしても、問題は依然として解決されない。この点では当業者に周知のように、金属部分以外に既知のポンプは種々の型のプラスチック材料も含む。これは、ポンプの所定の部分を実質的に剛性の材料から構成し、他の部分を実質的に変形可能な材料から構成すべきであるからである。従って、同一ポンプがアセタール樹脂の部分と、ポリプロピレン、ポリエチレン又は他のプラスチックの部分とを備えることになる。更に、これらのプラスチックはびん及び／又はポンプをびんに固定するためのソケットリングを形成するために使用されるプラスチックと異なる場合もある。

【0008】従って、これらの状況であってもポンプを分解することにより個々のプラスチック材料を再利用するのは不可能であるので、ポンプを取り外して廃棄することが必要になる。

【0009】従って、既知の型のディスペンサの構成材料の再使用は実際には不都合である。

【0010】以上の点に基づき、本発明の第2の目的は、構成材料を再利用できるのみならずこのような再利用が容易なディスペンサを提供することである。

【0011】本発明の第3の目的は、ポンプが非常に単

純で且つ組み立て易く、従って、非常に低費用のディスペンサを提供することである。

【0012】

【課題を解決するための手段】上記第1の目的は、第1の弾性復帰手段が弾性変形可能なプラスチック材料の同軸スカートから構成され、該スカートが分配ノブの押圧時に変形可能であることを特徴とする本発明のディスペンサにより達せられる。

【0013】従って、前記スカートはピストンを静止位置に復帰させることができピストン復帰ばねとして機能する。

【0014】スカートは軸方向に変形可能なペローズ形態でもよい。

【0015】上記記載から明らかなように、本発明のディスペンサは分配される物質と接触する金属部分を含まない。従って、物質汚染の問題は解決される。

【0016】上記型のディスペンサから出発して、本発明の上記第2の目的に関連する問題、即ち構成材料を容易且つ経済的に再利用可能なディスペンサを提供するという問題も解決できる。

【0017】この目的は本発明のディスペンサによると、前記第2の弾性手段が弾性変形可能なプラスチック材料から構成され、びん、ポンプを固定するためのソケットリング、全ポンプ構成部分及びその他の全部分が、実質的に剛性の部材と実質的に弾性変形可能な部材との両方を形成することが可能な型の同様のプラスチック材料から形成されるという事実により達せられる。自明のように、びんに収容された物質の最終量を分配し終わると、このようなディスペンサは同様型のプラスチック材料から完全に構成されるので完全に再利用できる。

【0018】上記特徴を有するプラスチック材料は、例えば高密度（H D P E）、低密度（L D P E）及び超低密度（V L D P E）形態で入手可能なポリエチレンである。周知のように、高密度ポリエチレンは実質的に剛性であり、低密度ポリエチレンは実質的に弾性変形可能であり、超低密度ポリエチレンは低密度ポリエチレンよりも更に変形可能である。

【0019】本発明のディスペンサは更に、本発明の第3の目的を達することができる。この点では全ポンプ金属部分をプラスチック部分に置き換え、全ポンプ部分を同様型のプラスチック材料から構成することにより、これらの部分を射出成形により形成できるのみならず、構成部分の数も非常に少なくすることができ、ポンプの組み立てが著しく簡単になる。従って、ディスペンサを非常に低費用にすることができる。

【0020】

【実施例】以下、添付図面を参考に実施例により本発明を更に詳しく説明する。

【0021】図1に示したディスペンサは、分配すべき物質を収容するためのびん100と、予め決定された量

の物質を分配するための手動ポンプ1と、ポンプをびん100のくび12に固定するためのソケットリング11Aとを備える。ポンプは円筒形中空本体2から構成され、該本体の空洞の内側では、円筒形中空シャフト5が挿入された全体的に円筒形中空のピストンユニット4に属するピストン3が摺動する。(図面に関して)下端部において前記シャフトは該シャフトと一体的な弁部材7を含み、該弁部材は前記ピストンユニット4の下部環状リップ8と協働し、中空本体2の内側とシャフト5の内側との連通を提供又は阻止するための弁を形成する。シャフト5及びピストンユニット4の上端部は、(シャフト5の)一端を(ピストンユニット4の)他端に押し込むことにより相互に同軸状に結合され、分配ノズル9(図面には外形として示す)を備える通常型の分配ノブ10と連合する。

【0022】ポンプは更に種々の機能、即ち円筒形本体2の上部アーチャの閉鎖エレメントとしての機能、シャフト5の案内としても機能する内側環状突起36によりピストンユニット4のピストンの行程を制限する機能、及びポンプ1をびん100のくび12に機能を有するソケットリング11を備える。

【0023】分配ノブ10はペローズ13の形状の下部13を有する。このペローズの下縁部13Aは図面に示すように肉厚であり、ソケットリング11とスナップ係合するように構成されている。より具体的には、ソケットリング11は上方向に伸びる環状突出部11Aを備え、該突出部はペローズ13の肉厚下縁部13Aを所定位置に固定するために使用される一連の突起37をその内側表面に備える。環状突出部11Aは、ペローズ13の保護としても機能する。

【0024】ピストンユニット4のピストン3、弁部材7及び円筒形本体2の下部は圧力チャンバ18を規定する。該圧力チャンバはピストン3及び弁部材7と対向する下側に、噴出口14に開口するアーチャ16を備えており、該噴出口には分配すべき物質を収容するびん100に浸漬するようにチューブ15が挿入されている。

【0025】アーチャ16には、分配すべき物質をチャンバ18には流入させ、チャンバからは流出しないようにする逆止弁17が設けられている。弁17は環状リム38を備えており、円筒形本体2に設けられた弁座に配置されている。該環状リム38の一部には円形壁39が一体部品として結合されており、該壁はアーチャ16のリムに支承されてアーチャを閉じるが、チューブ15を通って吸引された物質の作用によりチャンバ18の内部に向かって撓曲することができ、分配すべき物質をチャンバに流入することができる。

【0026】下端部の近傍において円筒形本体2は更に環状ステップ30を備えており、ピストンユニット4のピストン3の下縁部31はポンプの呼び水中にこのステップに支承される。上縁部32の近傍で円筒形本体2の

10 壁には後述するような目的を有するアーチャ33が備えられている。

【0027】ピストン3以外にピストンユニット4は、ピストン3に近接する小さい円筒形壁厚の下部4A又はスカートと、大きい円筒形壁厚の上部4Bとの2部分から構成される中空円筒形シャンクを含む。上述のように上部4Bはシャフト5上に押し付けられ、該シャフトと共に結合されている。図面から明らかなように、スカート4Aは(隙間19を形成するために)シャフト5から離間されると共に、内側環状突起36及び外側環状突起26の結合した内側表面からも離間されている。

【0028】ピストンユニット4のピストン3は円筒形本体2の内側で摺動可能であり、チャンバ18に収容された流体に対して完全な密封を確保するような従来形態である。図面から明らかなように、中空シャフト5の上端部21は分配ノブ10に既知方法でスナップ装着されている。シャフト5の下端部の弁部材7はステップ23を備えており、ポンプが静止位置にあるときにピストン3の環状リップ8はこのステップ上に支承され、チャンバ18に収容された物質が下端部に設けられたアーチャ24を通じて隙間19及びシャフト5に侵入しないようにするシールを形成する。図面から明らかなように、弁部材7は、圧力チャンバ18をシャフト5の内側に連結するための2つの対向アーチャ24を形成する交差形エレメントによりシャフト5に固定されている。

【0029】上述のように、結合した環状突起26及び36の内側表面と、ピストンユニット4の部分4A、4Bの表面との間には隙間34が残されている。

【0030】シールを形成する以外に、内側環状突起36の下縁部35は、ノブが解放される上方(即ち矢印Aの方向)行程中にピストン3の行程ストップとして機能する。

【0031】本発明のディスペンサは更に、図示したようなびんにスナップ結合されるように構成された、ポンプ1の通常の保護キャップ101を含む。

【0032】記載の全ポンプコンポーネントは、射出成形により同様型のプラスチック材料から形成される。より具体的には、分配ノブ10、ペローズ13、ピストン3を含むピストンユニット4、逆止弁17及び浸漬チューブ15はすべて低密度ポリエチレンから構成されており、びん100及びキャップ101を含む残りのコンポーネントは高密度ポリエチレンから形成されている。びんは吹込成形により都合よく形成される。

【0033】本発明のポンプは次のように動作する。

【0034】まず最初にポンプ1の呼び水状態を説明する。分配ノブ10を下方向(矢印Bの方向)に押すと、ピストンユニット4及びシャフト5は下方向に移動し、従ってチャンバ18に収容された空気を圧縮し、チャンバは逆止弁17により下部を閉鎖される。行程の終わりに、ピストン3の下縁部31は円筒形本体2に設けられ

たステップ30に支承される。分配ノブ10を押し続けると、ピストンユニット4のスカート4Aは外方向に樽状に変形する。この結果、ピストン3の環状リップ8は弁部材7上のステップ23から分離される。従って、チャンバ18とシャフト5の内部との間に（2つのアーチャ24を介して）通路が開き、チャンバ18の内側で圧縮された空気は分配ノブ10のノズル9を通って排出される。この点で分配ノブ10は解放され、弾性ベローズ13により初期位置に復帰し、ピストン3を含むピストンユニット4、シャフト5及び弁部材7は移動する。従って、スカート4Aの変形が停止すると、リップ8は再び弁部材7のステップ23に圧着され、従って、チャンバ18とシャフト5の内部との間の連通を遮断する。こうしてチャンバ18内には真空が形成され、逆止弁17が開き、チャンバ18は予め決定された量の被分配物質で充填される。従って、ポンプは使用準備ができる。

【0035】前記隙間34及びアーチャ33により形成されるチャネル、即ち矢印Pにより図面中に示す通路は、ポンプ1の作用により1回に分配される物質の体積に等しい体積の空気を既知通りにびん100に導入することができる。

【図面の簡単な説明】

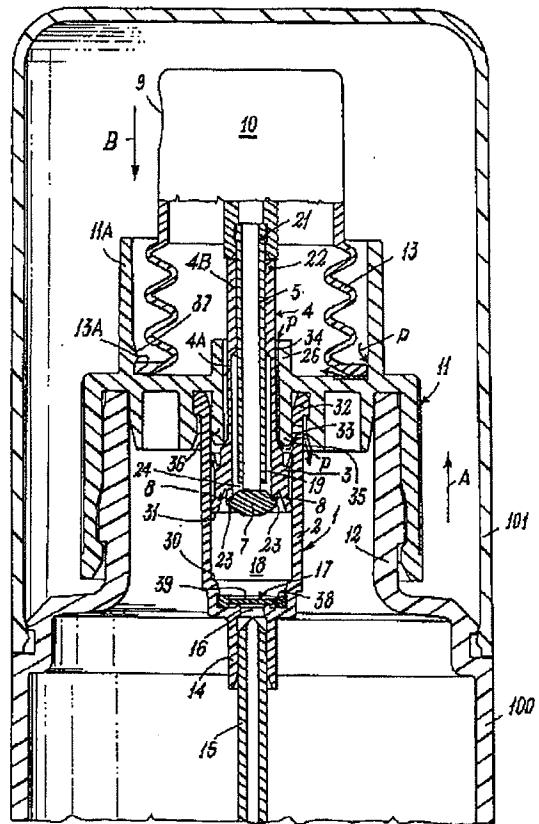
【図1】本発明のディスペンサの部分垂直軸方向断面図

である。

【符号の説明】

1	ポンプ
2	中空本体
3	ピストン
4	ピストンユニット
4A	スカート
5	シャフト
7	弁部材
8	環状リップ
9	分配ノズル
10	分配ノブ
11	ソケットリング
13	ベローズ
16, 24	アーチャ
17	逆止弁
18	圧力チャンバ
23	交差形エレメント
26, 36	環状閉鎖エレメント
34, 33	連結手段
38	環状リム
39	環状壁
100	びん

【図1】



フロントページの続き

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1. This document has been translated by computer. So the translation may not reflect the original precisely.

2. **** shows the word which can not be translated.

3. In the drawings, any words are not translated.

CLAIMS

[Claim 1] A plastic bottle for accommodating a substance which should be distributed.

A plastic socket ring for fixing to a mouth of a bottle a wobble pump for distributing a substance of quantity determined beforehand, and a pump.

On a whole target in which it is the dispenser provided with the above, and both ends are open and said pump equips the 1st end with a check valve of plastic material similarly, a cylindrical shape hollow plastic body, It has a hollow body and the shape of the same axle, and is the overall-length cylindrical shape hollow plastic shaft selectively accommodated in this main part, An end of a shaft has projected outside through the 2nd end of a hollow body, A shaft is supporting a plastic distribution knob which equips both directions with a distribution nozzle which it is movable to shaft orientations and a projecting end part of a shaft opens for free passage inside a shaft to a hollow body, Said shaft containing at least one aperture for a free passage of the other end of a shaft with the inside of a shaft, and the inside of a hollow body, It is a plastic piston movable in both directions under fluid-tight conditions by the inside of a hollow body, To a shaft so that an inner part of a hollow body arranged between this piston and a check valve may specify a pressure chamber, and may be arranged at a shaft and an aperture of a shaft may be opened and closed Said piston movable in both directions, The 1st elastic restoration means for returning a piston to a static position which is a closed position of an aperture of a shaft, The 2nd elastic restoration means for returning a shaft to a position which projects most from a hollow body when a pressure applied to a distribution knob stops, An annular closing element which the 2nd end of a hollow body is closed and functions as guidance of a shaft, In order to connect an inside of a bottle outside, when it is provided in a pump and a piston is in a static position, it has connecting mechanism which intercepts this passage, and it comprises a plastic skirt board which carries out elastic deformation when said 1st elastic restoration means pushes a distribution knob.

[Claim 2] Said 2nd elastic restoration means comprises plastic material in which elastic deformation is possible, The dispenser according to claim 1 currently forming from same plastic material of a mold with all the component part of a dispenser able to form substantially both a rigid member and a member in which elastic deformation is substantially possible.

[Claim 3] The dispenser according to claim 2, wherein said plastic material is polyethylene available with high density, low density, and a super-low density gestalt.

[Claim 4] The 1st cylindrical shape portion of a shank of a piston unit is firmly combined with a portion of a shaft of a pump in same axle, The dispenser according to any one of claims 1 to 3, wherein said skirt board forms the 2nd cylindrical shape portion of a shank of a piston unit, and it is thickness smaller than this 1st portion and a skirt board is formed in one with the 1st portion and a piston unit.

[Claim 5] In order to intercept a free passage between a pressure chamber and the inside of a shaft, the valve member 7 is being fixed to an inner end of a shaft so that it may collaborate with an annular lip of a piston, and this valve member, The dispenser according to claim 4 being connected with a shaft by crossed type element which forms two apertures for connecting a pressure chamber with an inside of a shaft when a ring member has not collaborated with a valve member.

[Claim 6] The dispenser according to any one of claims 1 to 5, wherein the 2nd elastic means contains an annular bellows element which unites with a distribution knob.

[Claim 7] The dispenser according to any one of claims 1 to 6, wherein a check valve contains an annular rim which has at least the part combined with a ringwall supported movably on an edge of an aperture provided in a bottom of a hollow body in one.

DETAILED DESCRIPTION

[0001]

[Industrial Application] A bottle for this invention to relate to the dispenser for distributing the substance of fluid material, cream, or a paste gestalt, and for this dispenser accommodate said substance which should be distributed, In order to distribute the substance of the quantity determined beforehand, it has a pump in which manual operation is possible, and a socket ring for fixing a pump to the mouth of a bottle.

[0002]

[Description of the Prior Art] Such a dispenser is known from before. The pump used by such a dispenser, It is the overall-length cylindrical shape hollow shaft which both ends are open and equips the 1st end with a check valve and which is the same axle-like and was selectively accommodated in the main part by the main part of a cylindrical shape, and the hollow body on the whole, and the end of the shaft has projected outside through the 2nd end of a hollow body.

A shaft is movable to shaft orientations in both directions to a hollow body, and the distribution knob for which the projecting end part of a shaft is provided with the inside of a shaft and a distribution nozzle open for free passage is supported, Said shaft provided with at least one aperture for a free passage of the other end of a shaft with the inside of a shaft and a hollow body, Are a piston movable in both directions under fluid-tight conditions inside a hollow body, and the inner part of the hollow body arranged between a piston and said check valve specifies a pressure chamber, Said piston movable [to a shaft] in both directions under fluid-tight conditions so that it may be arranged at said shaft and said aperture of a shaft may be opened and closed, The 1st metal coil return spring for returning a piston to the static position which the aperture of the shaft has closed when a pressure is not applied to a distribution knob, The 2nd metal coil return spring that returns a shaft to the position which projects mostly from a hollow body when the pressure applied to a distribution knob stops, It comprises substantially connecting mechanism constituted so that connection might be intercepted, when it is provided inside the pump so that the annular closing element of the 2nd end of the hollow body which functions also as guidance of a shaft, and the inside of a bottle may be connected outside, and a piston was in a static position.

[0003] Generally a check valve is a metal ball type, and it prevents that the substance which exists in a pressure chamber to be distributed flows backwards into a bottle.

[0004] A related pump contacts a substance to be distributed, and reacts chemically, and the point that the metal part (especially a

nonreturn ball valve and the 1st return spring) which pollutes these is included has the 1st fault. In these known dispensers. As a result, said metal part corrodes and there is a risk of barring proper operation of a pump.

[0005] The pump which uses the PURASUTCHIKU valve of a specific form instead of a metal ball check valve is also known (for example, the [under the name of an applicant for this patent / European Patent application] refer to EP-A-No. 0469368). Specifically, these valves may comprise plastic material which is not eroded with the substance accommodated in the bottle. However, it is insufficient for conquering the problem of contamination thoroughly.

[0006] Therefore, the 1st purpose of this invention is to provide a described [above] type dispenser which does not pollute the substance distributed.

[0007] It is obvious that existence of the metal part of a pump produces a serious problem at this point about the problem which reuses the component of the dispenser which became empty. This is because a pump must be removed and discarded. Such operation raises reuse expense to an unusable grade. Even if it is going to manufacture a pump without a metallic member, a problem is not still solved. At this point, a known pump also includes the plastic material of various molds in a person skilled in the art as everyone knows in addition to a metal part. This is because the predetermined portion of a pump should be substantially constituted from a rigid material and other portions should be substantially constituted from a deformable material. Therefore, the same pump will be provided with the portion of acetal resin, and the portion of polypropylene, polyethylene, or other plastics. These plastics may differ from the plastic used in order to form the socket ring for fixing a bottle and/or a pump to a bottle.

[0008] Therefore, since it is impossible to reuse each plastic material by disassembling a pump even if it is in these situations, it is necessary to remove and discard a pump.

[0009] Therefore, the reuse of the component of the dispenser of a known mold is actually inconvenient.

[0010] It is that the 2nd purpose of this invention not only can reuse a component, but such reuse provides an easy dispenser based on the above point.

[0011] The 3rd purpose of this invention is for a pump to be dramatically simple, to be easy to assemble, therefore to provide the dispenser of low cost dramatically.

[0012] [Means for Solving the Problem] The 1st elastic restoration means comprises a coaxial skirt board of plastic material in which elastic deformation is possible, and the 1st purpose of the above can be reached by a dispenser of this invention, wherein this skirt board is deformable at the time of press of a distribution knob.

[0013] Therefore, said skirt board functions as a piston return spring which can return a piston to a static position.

[0014] A bellows gestalt deformable to shaft orientations may be sufficient as a skirt board.

[0015] A dispenser of this invention does not contain a metal part in contact with a substance distributed so that clearly from the above-mentioned statement. Therefore, a problem of substance contamination is solved.

[0016] A described [above] type dispenser is left and a problem of providing a recyclable dispenser easily and economically can also solve a problem relevant to the 2nd purpose of the above of this invention, i.e., a component.

[0017] According to the dispenser of this invention, this purpose comprises plastic material in which elastic deformation of said 2nd elastic means is possible. It can be reached by a fact of being formed from a socket ring for fixing a bottle and a pump, all the pump component part, and same plastic material of a mold in which other things for which a part all forms both a rigid member and a member in which elastic deformation is substantially possible substantially are possible. If it finishes distributing the last quantity of a substance accommodated in a bottle so that it may be obvious, since it comprises plastic material of type thoroughly similarly, such a dispenser is thoroughly recyclable.

[0018] Plastic material which has the above-mentioned feature is polyethylene available with high density (HDPE), low density (LDPE), and a super-low density (VLDPE) gestalt, for example. High density polyethylene is rigidity substantially as everyone knows, elastic deformation is substantially possible for low density polyethylene, and ultra low density polyethylene is still more deformable than low density polyethylene.

[0019] The dispenser of this invention can attain the 3rd purpose of this invention further. It not only can form these portions by injection molding, but at this point, by transposing all the pump metal parts to a plastic part, and constituting all the pump parts from plastic material of type similarly, it can also lessen the number of component part dramatically, and an assembly of a pump becomes remarkably easy. Therefore, a dispenser can be dramatically made into low cost.

[0020] [Example] Hereafter, an example explains this invention for an accompanying drawing to reference in more detail.

[0021] The dispenser shown in drawing 1 is provided with the wobble pump 1 for distributing the substance of the quantity beforehand determined as 100 which is not extended in order to accommodate the substance which should be distributed, and the socket ring 11A for fixing a pump to ** 12 which goes away bottle 100. A pump comprises the cylindrical shape hollow body 2, and the piston 3 in which the cylindrical shape hollow shaft 5 was inserted and which belongs to the piston unit 4 of cylindrical shape hollow on the whole slides in the inside of the cave of this main part. (Related with a drawing) In a lower end part, including the one valve member [said shaft] 7 as this shaft, this valve member collaborates with the lower annular lip 8 of said piston unit 4, and forms the valve for providing or preventing a free passage with the inside of the hollow body 2, and the inside of the shaft 5. By stuffing one end (shaft 5) into the other end (piston unit 4), it is mutually combined in the shape of the same axle, and the shaft 5 and the upper bed part of the piston unit 4 unite with the distribution knob 10 of an ordinary type provided with the distribution nozzle 9 (shown in a drawing as an outside).

[0022] The function of further versatility [pump], i.e., the function as a closing element of the top aperture of the main part 2 of a cylindrical shape, The function in which the inside annular projection 36 which functions also as guidance of the shaft 5 restricts the distance of the piston of the piston unit 4, and ** 12 which goes away the pump 1 bottle 100 are equipped with the socket ring 11 which has a function.

[0023] The distribution knob 10 has the lower part 13 of the shape of the bellows 13. The margo-inferior part 13A of this bellows is thick as shown in a drawing, and it is constituted so that snap engagement may be carried out with the socket ring 11. The socket ring 11 is provided with the annular projection 11A extended upward, and, more specifically, this lobe equips the inner surface with a series of projections 37 used since the thick margo-inferior part 13A of the bellows 13 is fixed to a prescribed position. The annular projection 11A functions also as protection of the bellows 13.

[0024] The lower part of the piston 3 of the piston unit 4, the valve member 7, and the main part 2 of a cylindrical shape specifies the pressure chamber 18. This pressure chamber equips the piston 3 and the valve member 7, and the bottom that counters with the

aperture 16 which carries out an opening in the rocket engine jets 14, and the tube 15 is inserted in these rocket engine jets so that it may be immersed in the bottle 100 which accommodates the substance which should be distributed.

[0025] The substance which should be distributed is made to flow into the chamber 18, and the check valve 17 kept from flowing out is formed in the aperture 16 from the chamber. The valve 17 is provided with the annular rim 38, and is arranged at the valve seat provided in the main part 2 of a cylindrical shape. Although the ringwall 39 is combined with this a part of annular rim 38 as an integral part, this wall is supported movably by the rim of the aperture 16 and an aperture is closed. It can bend toward the inside of the chamber 18 by operation of the substance attracted through the tube 15, and the substance which should be distributed can be flowed into a chamber.

[0026] [near the lower end part], the main part 2 of a cylindrical shape is further provided with the annular step 30, and the margo-inferior part 31 of the piston 3 of the piston unit 4 is supported movably by this step in the pump priming of a pump. The wall of the main part 2 of a cylindrical shape is equipped with the aperture 33 which has the purpose which is mentioned later near the rising wood 32.

[0027] The piston unit 4 contains the hollow cylinder form shank which comprises two portions of the small lower part 4A of cylindrical shape wall thickness or skirt board close to the piston 3, and the upper part 4B of large cylindrical shape wall thickness in addition to piston 3. As mentioned above, the upper part 4B is forced on the shaft 5, and is combined with this shaft. The skirt board 4A is estranged from the shaft 5 (in order to form the crevice 19), and it is estranged also from the inner surface which the inside annular projection 36 and the outside annular projection 26 combined so that clearly from a drawing.

[0028] The piston 3 of the piston unit 4 is slidable by the inside of the main part 2 of a cylindrical shape, and a gestalt conventionally which secures perfect seal to the fluid accommodated in the chamber 18. Snap wearing of the upper bed part 21 of the hollow shaft 5 is carried out by the known method at the distribution knob 10 so that clearly from a drawing. When the valve member 7 of the lower end part of the shaft 5 is provided with Step 23 and a pump is in a static position, the annular lip 8 of the piston 3 is supported movably on this step, The substance accommodated in the chamber 18 forms the seal kept from invading into the crevice 19 and the shaft 5 through the aperture 24 provided in the lower end part. The valve member 7 is being fixed to the shaft 5 by the crossed type element which forms the two opposite apertures 24 for connecting the pressure chamber 18 inside the shaft 5 so that clearly from a drawing.

[0029] As mentioned above, the crevice 34 is left behind between the inner surface of the united annular projections 26 and 36, and the surface of the portions 4A and 4B of the piston unit 4.

[0030] Besides forming a seal, the margo-inferior part 35 of the inside annular projection 36 functions as a distance stop of the piston 3 into the upper part (namely, direction of arrow A) distance from which a knob is released.

[0031] The dispenser of this invention contains the usual protective cap 101 of the pump 1 further constituted by bottle which was illustrated so that snap combination might be carried out.

[0032] All the pump components of a statement are similarly formed from the plastic material of type of injection molding. The piston unit 4, the check valve 17, and the immersion tube 15 containing the distribution knob 10, the bellows 13, and the piston 3 more specifically comprise low density polyethylene altogether. The remaining components including the bottle 100 and the cap 101 are formed from high density polyethylene. A bottle is formed with sufficient convenience of blow forming.

[0033] The pump of this invention operates as follows.

[0034] The pump-priming state of the pump 1 is explained first. When the distribution knob 10 is pushed down (the direction of the arrow B), the air which the piston unit 4 and the shaft 5 moved downward, therefore was accommodated in the chamber 18 is compressed, and a chamber has the lower part closed by the check valve 17. The margo-inferior part 31 of the piston 3 is supported movably by Step 30 provided in the main part 2 of a cylindrical shape in the end of distance. If it continues pushing the distribution knob 10, the skirt board 4A of the piston unit 4 will change into an outside direction in the shape of slack. As a result, the annular lip 8 of the piston 3 is separated from Step 23 on the valve member 7. Therefore, a passage (passing the two apertures 24) opens between the chamber 18 and the inside of the shaft 5, and the air compressed by the inside of the chamber 18 is discharged through the nozzle 9 of the distribution knob 10. The distribution knob 10 is released at this point, it returns to an initial position with the elastic bellows 13, and the piston unit 4, the shaft 5, and the valve member 7 containing the piston 3 move. Therefore, if modification of the skirt board 4A stops, the lip 8 will be again stuck to Step 23 of the valve member 7 by pressure, therefore will intercept the free passage between the chamber 18 and the inside of the shaft 5. In this way, a vacuum is formed in the chamber 18, the check valve 17 opens, and the chamber 18 is filled up with the substance of the quantity determined beforehand to be distributed. Therefore, a pump is [use] ready.

[0035] The channel formed of said crevice 34 and the aperture 33, i.e., the passage shown in a drawing with the arrow P, can introduce the air of volume equal to the volume of the substance distributed at once by operation of the pump 1 as known at the bottle 100.

TECHNICAL FIELD

A bottle for this invention to relate to the dispenser for distributing the substance of fluid material, cream, or a paste gestalt, and for this dispenser accommodate said substance which should be distributed. In order to distribute the substance of the quantity determined beforehand, it has a pump in which manual operation is possible, and a socket ring for fixing a pump to the mouth of a bottle.

TECHNICAL PROBLEM

Such a dispenser is known from before. The pump used by such a dispenser, It is the overall-length cylindrical shape hollow shaft which both ends are open and equips the 1st end with a check valve and which is the same axle-like and was selectively accommodated in the main part by the main part of a cylindrical shape, and the hollow body on the whole, and the end of the shaft has projected outside through the 2nd end of a hollow body.

A shaft is movable to shaft orientations in both directions to a hollow body, and the distribution knob for which the projecting end part of a shaft is provided with the inside of a shaft and a distribution nozzle open for free passage is supported. Said shaft provided with at least one aperture for a free passage of the other end of a shaft with the inside of a shaft and a hollow body, Are a piston movable in both directions under fluid-tight conditions inside a hollow body, and the inner part of the hollow body arranged between

a piston and said check valve specifies a pressure chamber. Said piston movable [to a shaft] in both directions under fluid-tight conditions so that it may be arranged at said shaft and said aperture of a shaft may be opened and closed. The 1st metal coil return spring for returning a piston to the static position which the aperture of the shaft has closed when a pressure is not applied to a distribution knob. The 2nd metal coil return spring that returns a shaft to the position which projects mostly from a hollow body when the pressure applied to a distribution knob stops. It comprises substantially connecting mechanism constituted so that connection might be intercepted, when it is provided inside the pump so that the annular closing element of the 2nd end of the hollow body which functions also as guidance of a shaft, and the inside of a bottle may be connected outside, and a piston was in a static position.

[0003] Generally a check valve is a metal ball type, and it prevents that the substance which exists in a pressure chamber to be distributed flows backwards into a bottle.

[0004] A related pump contacts a substance to be distributed, and reacts chemically, and the point that the metal part (especially a nonreturn ball valve and the 1st return spring) which pollutes these is included has the 1st fault of these known dispensers. As a result, said metal part corrodes and there is a risk of barring proper operation of a pump.

[0005] The pump which uses the PURASUTCHIKU valve of a specific form instead of a metal ball check valve is also known (for example, the [under the name of an applicant for this patent / European Patent application] refer to EP-A-No. 0469368). Specifically, these valves may comprise plastic material which is not eroded with the substance accommodated in the bottle. However, it is insufficient for conquering the problem of contamination thoroughly.

[0006] Therefore, the 1st purpose of this invention is to provide a described [above] type dispenser which does not pollute the substance distributed.

[0007] It is obvious that existence of the metal part of a pump produces a serious problem at this point about the problem which reuses the component of the dispenser which became empty. This is because a pump must be removed and discarded. Such operation raises reuse expense to an unusable grade. Even if it is going to manufacture a pump without a metallic member, a problem is not still solved. At this point, a known pump also includes the plastic material of various molds in a person skilled in the art as everyone knows in addition to a metal part. This is because the predetermined portion of a pump should be substantially constituted from a rigid material and other portions should be substantially constituted from a deformable material. Therefore, the same pump will be provided with the portion of acetal resin, and the portion of polypropylene, polyethylene, or other plastics. These plastics may differ from the plastic used in order to form the socket ring for fixing a bottle and/or a pump to a bottle.

[0008] Therefore, since it is impossible to reuse each plastic material by disassembling a pump even if it is in these situations, it is necessary to remove and discard a pump.

[0009] Therefore, the reuse of the component of the dispenser of a known mold is actually inconvenient.

[0010] It is that the 2nd purpose of this invention not only can reuse a component, but such reuse provides an easy dispenser based on the above point.

[0011] The 3rd purpose of this invention is for a pump to be dramatically simple, to be easy to assemble, therefore to provide the dispenser of low cost dramatically.

MEANS

The 1st elastic restoration means comprises a coaxial skirt board of plastic material in which elastic deformation is possible, and the 1st purpose of the above can be reached by a dispenser of this invention, wherein this skirt board is deformable at the time of press of a distribution knob.

[0013] Therefore, said skirt board functions as a piston return spring which can return a piston to a static position.

[0014] A bellows gestalt deformable to shaft orientations may be sufficient as a skirt board.

[0015] A dispenser of this invention does not contain a metal part in contact with a substance distributed so that clearly from the above-mentioned statement. Therefore, a problem of substance contamination is solved.

[0016] A described [above] type dispenser is left and a problem of providing a recyclable dispenser easily and economically can also solve a problem relevant to the 2nd purpose of the above of this invention, i.e., a component.

[0017] According to the dispenser of this invention, this purpose comprises plastic material in which elastic deformation of said 2nd elastic means is possible. It can be reached by a fact of being formed from a socket ring for fixing a bottle and a pump, all the pump component part, and same plastic material of a mold in which other things for which a part all forms both a rigid member and a member in which elastic deformation is substantially possible substantially are possible. If it finishes distributing the last quantity of a substance accommodated in a bottle so that it may be obvious, since it comprises plastic material of type thoroughly similarly, such a dispenser is thoroughly recyclable.

[0018] Plastic material which has the above-mentioned feature is polyethylene available with high density (HDPE), low density (LDPE), and a super-low density (VLDPE) gestalt, for example. High density polyethylene is rigidity substantially as everyone knows, elastic deformation is substantially possible for low density polyethylene, and ultra low density polyethylene is still more deformable than low density polyethylene.

[0019] The dispenser of this invention can attain the 3rd purpose of this invention further. It not only can form these portions by injection molding, but at this point, by transposing all the pump metal parts to a plastic part, and constituting all the pump parts from plastic material of type similarly, it can also lessen the number of component part dramatically, and an assembly of a pump becomes remarkably easy. Therefore, a dispenser can be dramatically made into low cost.

EXAMPLE

Hereafter, an example explains this invention for an accompanying drawing to reference in more detail.

[0021] The dispenser shown in drawing 1 is provided with the wobble pump 1 for distributing the substance of the quantity beforehand determined as 100 which is not extended in order to accommodate the substance which should be distributed, and the socket ring 11A for fixing a pump to ** 12 which goes away bottle 100. A pump comprises the cylindrical shape hollow body 2, and the piston 3 in which the cylindrical shape hollow shaft 5 was inserted and which belongs to the piston unit 4 of cylindrical shape hollow on the whole slides in the inside of the cave of this main part. (Related with a drawing) In a lower end part, including the one valve member [

said shaft] 7 as this shaft, this valve member collaborates with the lower annular lip 8 of said piston unit 4, and forms the valve for providing or preventing a free passage with the inside of the hollow body 2, and the inside of the shaft 5. By stuffing one end (shaft 5) into the other end (piston unit 4), it is mutually combined in the shape of the same axle, and the shaft 5 and the upper bed part of the piston unit 4 unite with the distribution knob 10 of an ordinary type provided with the distribution nozzle 9 (shown in a drawing as an outside).

[0022]The function of further versatility [pump], i.e., the function as a closing element of the top aperture of the main part 2 of a cylindrical shape, The function in which the inside annular projection 36 which functions also as guidance of the shaft 5 restricts the distance of the piston of the piston unit 4, and ** 12 which goes away the pump 1 bottle 100 are equipped with the socket ring 11 which has a function.

[0023]The distribution knob 10 has the lower part 13 of the shape of the bellows 13. The margo-inferior part 13A of this bellows is thick as shown in a drawing, and it is constituted so that snap engagement may be carried out with the socket ring 11. The socket ring 11 is provided with the annular projection 11A extended upward, and, more specifically, this lobe equips the inner surface with a series of projections 37 used since the thick margo-inferior part 13A of the bellows 13 is fixed to a prescribed position. The annular projection 11A functions also as protection of the bellows 13.

[0024]The lower part of the piston 3 of the piston unit 4, the valve member 7, and the main part 2 of a cylindrical shape specifies the pressure chamber 18. This pressure chamber equips the piston 3 and the valve member 7, and the bottom that counters with the aperture 16 which carries out an opening in the rocket engine jets 14, and the tube 15 is inserted in these rocket engine jets so that it may be immersed in the bottle 100 which accommodates the substance which should be distributed.

[0025]The substance which should be distributed is made to flow into the chamber 18, and the check valve 17 kept from flowing out is formed in the aperture 16 from the chamber. The valve 17 is provided with the annular rim 38, and is arranged at the valve seat provided in the main part 2 of a cylindrical shape. Although the ringwall 39 is combined with this a part of annular rim 38 as an integral part, this wall is supported movably by the rim of the aperture 16 and an aperture is closed. It can bend toward the inside of the chamber 18 by operation of the substance attracted through the tube 15, and the substance which should be distributed can be flowed into a chamber.

[0026][near the lower end part], the main part 2 of a cylindrical shape is further provided with the annular step 30, and the margo-inferior part 31 of the piston 3 of the piston unit 4 is supported movably by this step in the pump priming of a pump. The wall of the main part 2 of a cylindrical shape is equipped with the aperture 33 which has the purpose which is mentioned later near the rising wood 32.

[0027]The piston unit 4 contains the hollow cylinder form shank which comprises two portions of the small lower part 4A of cylindrical shape wall thickness or skirt board close to the piston 3, and the upper part 4B of large cylindrical shape wall thickness in addition to piston 3. As mentioned above, the upper part 4B is forced on the shaft 5, and is combined with this shaft. The skirt board 4A is estranged from the shaft 5 (in order to form the crevice 19), and it is estranged also from the inner surface which the inside annular projection 36 and the outside annular projection 26 combined so that clearly from a drawing.

[0028]The piston 3 of the piston unit 4 is slidable by the inside of the main part 2 of a cylindrical shape, and a gestalt conventionally which secures perfect seal to the fluid accommodated in the chamber 18. Snap wearing of the upper bed part 21 of the hollow shaft 5 is carried out by the known method at the distribution knob 10 so that clearly from a drawing. When the valve member 7 of the lower end part of the shaft 5 is provided with Step 23 and a pump is in a static position, the annular lip 8 of the piston 3 is supported movably on this step, The substance accommodated in the chamber 18 forms the seal kept from invading into the crevice 19 and the shaft 5 through the aperture 24 provided in the lower end part. The valve member 7 is being fixed to the shaft 5 by the crossed type element which forms the two opposite apertures 24 for connecting the pressure chamber 18 inside the shaft 5 so that clearly from a drawing.

[0029]As mentioned above, the crevice 34 is left behind between the inner surface of the united annular projections 26 and 36, and the surface of the portions 4A and 4B of the piston unit 4.

[0030]Besides forming a seal, the margo-inferior part 35 of the inside annular projection 36 functions as a distance stop of the piston 3 into the upper part (namely, direction of arrow A) distance from which a knob is released.

[0031]The dispenser of this invention contains the usual protective cap 101 of the pump 1 further constituted by bottle which was illustrated so that snap combination might be carried out.

[0032]All the pump components of a statement are similarly formed from the plastic material of type of injection molding. The piston unit 4, the check valve 17, and the immersion tube 15 containing the distribution knob 10, the bellows 13, and the piston 3 more specifically comprise low density polyethylene altogether. The remaining components including the bottle 100 and the cap 101 are formed from high density polyethylene. A bottle is formed with sufficient convenience of blow forming.

[0033]The pump of this invention operates as follows.

[0034]The pump-priming state of the pump 1 is explained first. When the distribution knob 10 is pushed down (the direction of the arrow B), the air which the piston unit 4 and the shaft 5 moved downward, therefore was accommodated in the chamber 18 is compressed, and a chamber has the lower part closed by the check valve 17. The margo-inferior part 31 of the piston 3 is supported movably by Step 30 provided in the main part 2 of a cylindrical shape in the end of distance. If it continues pushing the distribution knob 10, the skirt board 4A of the piston unit 4 will change into an outside direction in the shape of slack. As a result, the annular lip 8 of the piston 3 is separated from Step 23 on the valve member 7. Therefore, a passage (passing the two apertures 24) opens between the chamber 18 and the inside of the shaft 5, and the air compressed by the inside of the chamber 18 is discharged through the nozzle 9 of the distribution knob 10. The distribution knob 10 is released at this point, it returns to an initial position with the elastic bellows 13, and the piston unit 4, the shaft 5, and the valve member 7 containing the piston 3 move. Therefore, if modification of the skirt board 4A stops, the lip 8 will be again stuck to Step 23 of the valve member 7 by pressure, therefore will intercept the free passage between the chamber 18 and the inside of the shaft 5. In this way, a vacuum is formed in the chamber 18, the check valve 17 opens, and the chamber 18 is filled up with the substance of the quantity determined beforehand to be distributed. Therefore, a pump is [use] ready.

[0035]The channel formed of said crevice 34 and the aperture 33, i.e., the passage shown in a drawing with the arrow P, can introduce the air of volume equal to the volume of the substance distributed at once by operation of the pump 1 as known at the bottle 100.

DESCRIPTION OF DRAWINGS

[Drawing 1] It is a partial vertical axis direction sectional view of the dispenser of this invention.

[Description of Notations]

- 1 Pump
- 2 Hollow body
- 3 Piston
- 4 Piston unit
- 4A Skirt board
- 5 Shaft
- 7 Valve member
- 8 Annular lip
- 9 Distribution nozzle
- 10 Distribution knob
- 11 Socket ring
- 13 Bellows
- 16 and 24 Aperture
- 17 Check valve
- 18 Pressure chamber
- 23 Crossed type element
- 26 and 36 Annular closing element
- 34 and 33 Connecting mechanism
- 38 Annular rim
- 39 Ringed wall
- 100 Bottle